Leveraging Lean to Eliminate Seasonal Inventory Surges

Demand Analysis and Inventory Reduction Free Up More Than $1 million in Working Capital

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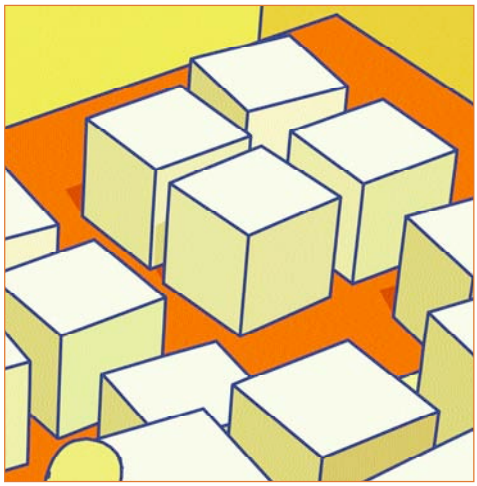
"What should you do after you've established a clear material flow, dramatically reduced setup times, and squeezed every ounce of waste out of the production process? It's time to take a look at the broader value chain."



Like every successful corporation, this $3-billion manufacturer and marketer of consumer household and personal care products has ambitious growth targets. After reviewing a detailed analysis of the market opportunity for each product family, company executives set a long-term goal to triple sales in the lighting segment. To do that with their current fulfillment processes would require an additional $30 to $100 million dollars in finished goods inventory, and another million square feet in warehousing space. That was unacceptable.

Shedding New Light on an Old Problem

One of the company's best-selling products in this segment is a light for boating and emergency situations. Marketed for hurricane preparation in the spring and summer, demand followed a somewhat seasonal pattern. In the factory where they make the light bodies and assemble them into the finished product, plant managers had established a clear material flow with tight tolerances and very little wasted movement from the injection molding machines through to assembly. But despite having an efficient production process, they were achieving only three inventory turns per year.

The problem was in the distribution network. The company stored several months of inventory in four regional distribution centers, plus two additional hurricane warehouse locations. One of its largest retail customers, which accounted for more than 50 percent of the sales volume for the product, also had warehouses all over the country, as well as its own dedicated facilities for hurricane-related items. It was also carrying 13 weeks of inventory. The company needed to pull together a cross-department team to take a closer look at customer demand and come up with a better inventory management strategy.

Making the Value Chain Transparent

One of the big "Aha!" moments for the team came when they overlaid four data elements: (1) point-of-sale data from their largest customer, (2) historical inventory levels, (3) shipment records, and (4) production volumes. The point-of-sale data went back to 2004, when four hurricanes hit Florida (Charley, Frances, Ivan, and Jeanne), three of them with sustained winds of more than 115 mph. A graph of this data clearly shows how customer demand at the retail level spiked with the preparation and cleanup activity around these storms. A no-sales-tax incentive program by the State of Florida that encourages residents to stock up on storm supplies triggered another sales spike.

Even in the worst hurricane season, when the company sold 189,000 lights during a peak six-week timeframe, inventory levels never fell below 500,000 units. To maintain pre-set inventory levels, as the data clearly showed, production responded to the sharp sales increases by cranking up output, only to shut down the assembly lines in

High Variability SKUs

Out of Sync • As illustrated by this month-to-month overlay, orders and shipments for this highly promoted product fail to align with the sales forecast, which is completely out of sync with production. Low production rates in January ramp up rapidly in February and March. The line is shut down completely in April and May when orders fail to materialize.

subsequent months when sales returned to normal levels. It became very clear to the improvement team that their inventory management policies were responsible for creating the spikes in production and shipments. Yes, they did need to build ahead to get ready for the no-tax events and the storm season, but actual customer demand at the retail level over the course of the year was fairly stable. They also realized that they didn't need to hold anywhere near the amount of inventory that they had been targeting.

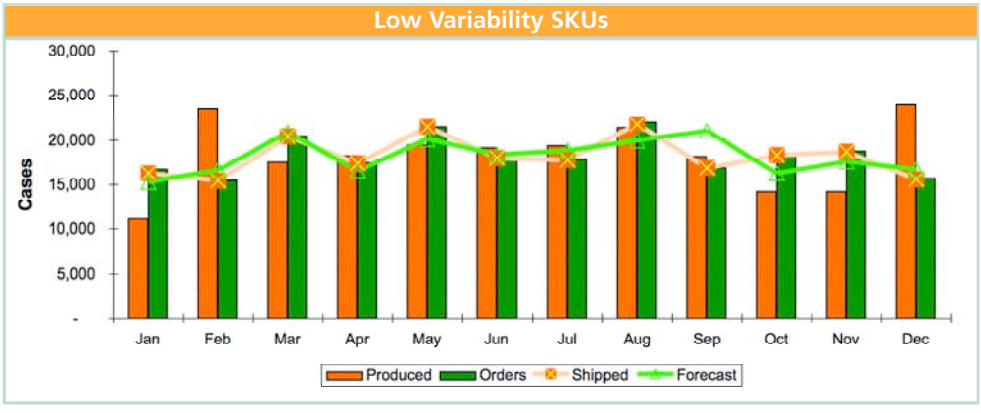
To determine more appropriate inventory levels the team developed a complex simulation tool that allowed managers to test different inventory levels with each SKU. The simulation allowed them to become more comfortable with what would happen to their customers if they had less product sitting in warehouses. Using actual shipment and point-of-sale data, they set new min/max levels and looked at the impact in the distribution centers and on production if they manufactured product closer to customer demand. They paid close attention to whether or not they would ever run out of product and thereby lose potential sales, and calculated the number of inventory turns they could expect to achieve.

Using the simulation the team found that they could reduce total inventory for this particular product from $1.8 million to $500,000, increasing turnover to almost 11 turns per year, and still achieve the current 99.3 percent fill rate. Based on the recommendation to pursue that target in phases, they developed an initial plan to reduce inventory to $800,000, which would double turnover from three to six turns per year. The week after completing the analysis, the client went from two shifts down to one on this product line, and then shut down production entirely for five weeks to work down the excess inventory.

To ensure that product would still be available during peak demand periods, they also established a weekly meeting during the hurricane season. Pulling together managers from sales, marketing, and operations, they discussed whether they needed to increase or decrease production. If they needed to boost output, operations established a process for bringing in and training temporary labor so that they could gradually ramp up production by 10,000 units per day.

Trust the Numbers

As part of this sales and operations planning (S&OP) process, managers had to learn to trust the statistically-based forecasts that were being calculated by their advanced planning and scheduling solution. Previously, the software would tell them what they needed to make, and then managers would manually adjust the numbers in order to hit the inventory numbers that they thought were really needed. When they looked at the fulfillment process, the improvement team also found that order policies were driving variation and volatility in demand. Their minimum order quantity for the product was a 65-unit package that shipped out on a quarter pallet, which retailers could move directly to the sales floor. With average store sales of 10.6 units per week, the quarter pallet represented a month and a half of inventory.



Bumpy Ride • Even for this low variability product, the alignment of orders and shipments could be improved further by smoothing the large swings in the January-February and September-December timeframes.

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Working with their largest customer, company managers determined that a unit pack of 13 (aligned with the weekly sales average) would save floor space and dramatically smooth out the replenishment process. Not only that, the redesigned packaging was cheaper than the current packaging, and it would fit into their existing merchandizing fixtures.

This consumer goods company has begun its journey toward a lean value chain by focusing on demand management. It's now using point-of-sale data to set appropriate inventory levels. Regular S&OP meetings are speeding communication and aligning market intelligence with production. Packaging configurations are being reviewed with customers to determine what's best for both the retail shelf and the overall value chain.

Developing a lean value chain means addressing four key links: demand management, order fulfillment, business planning and scheduling, and supply management. Managers now understand the benefits of having inventory levels tied to customer demand, and they know how to manage the risks. The company will achieve further inventory reductions, and the ability to support future sales growth, as it rolls out these practices to other business units and product lines. ■